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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/772.725

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Larrie A. Deardurff

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EXAMINER

MARTIN, LAURA E

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/772,725	DEARDURFF ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Laura E. Martin	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 2-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |



## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-5, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deardurff et al. (US 6494942) in view of Riou et al. (US 4877686).

#### **Deardurff et al. discloses:**

As per claim 2: a printing system wherein a boronic acid dye comprises a boric acid group or boronic acid group (column 4, lines 3-10) and a dye selected from the group consisting of azo, triphenylmethane, anthraquinone, methane, xanthine, oxazine, thiazine, azine, thiazole, quinolinone, aminoketone, nitro, nitroso, phthalocyanine, acridine, indamine, and indophenol (column 2, lines 59-64).

As per claim 3: a printing system comprising an inkjet ink having a boronic acid dye (column 4, lines 3-10) and a coated print medium (column 10, line 7, table 1).

#### **Deardurff et al. does not disclose:**

As per claim 3: a coating layer on the coated print medium comprising a polyhydroxylated material.

As per claim 4: a polyhydroxylated material that comprises a polyhydroxylated compound having at least two hydroxyl groups on one molecule of the polyhydroxylated compound.



As per claim 5: at least two hydroxyl groups positioned on the same side of the polyhydroxylated compound.

As per claim 8: the polyhydroxylated compound is selected from the group consisting of polyvinyl alcohol, cellulose, a sugar, and a starch.

As per claim 9: the polyhydroxylated material comprises at least two hydroxylated compounds each hydroxylated compound having at least two hydroxyl groups.

**Riou et al. discloses:**

As per claim 3: a coating layer on the coated print medium comprising a polyhydroxylated material (column 3, lines 45-53).

As per claim 4: a polyhydroxylated material that comprises a polyhydroxylated compound having at least two hydroxyl groups on one molecule of the polyhydroxylated compound (column 3, lines 45-53).

As per claim 5: at least two hydroxyl groups positioned on the same side of the polyhydroxylated compound (column 3, lines 45-53).

As per claim 8: the polyhydroxylated compound is selected from the group consisting of polyvinyl alcohol, cellulose, a sugar, and a starch (column 3, lines 50-53).

As per claim 9: the polyhydroxylated material comprises at least two hydroxylated compounds each hydroxylated compound having at least two hydroxyl groups (column 3, lines 62-66)..



It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the printing system of Deardurff et al. with the polyhydroxylated material of Riou et al. in order to create a smooth printed image.

Claims 6, 7, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deardurff et al. (US 6494942) and Riou et al. (US 4877686), and further in view of Kojima et al. (US 5380612).

**Deardurff et al. and Riou et al. disclose:** the printing systems of claims 4 and 9.

**Deardurff et al. and Riou et al. do not disclose:**

As per claim 6: at least two hydroxyl groups are positioned on adjacent atoms.

As per claim 7: at least two hydroxyl group are positioned on non-adjacent atoms.

As per claim 10: at least one hydroxyl group on each of the at least two hydroxylate compounds is positioned on the same side of the polyhydroxylated material.

As per claim 11: the hydroxylated compound comprises silica or a modified silica.

**Kojima et al. discloses:**

As per claim 6: at least two hydroxyl groups are positioned on adjacent atoms (column 8, lines 43-66).

As per claim 7: at least two hydroxyl group are positioned on non-adjacent atoms (column 8, lines 43-66).



As per claim 10: at least one hydroxyl group on each of the at least two hydroxylate compounds is positioned on the same side of the polyhydroxylated material (column 8, lines 43-66).

As per claim 11: the hydroxylated compound comprises silica or a modified silica (column 8, lines 43-66).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the printing system of Deardurff et al. as modified with the disclosure of Kojima et al. in order to better disperse the coating solution.

Claims 12-16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deardurff et al. (US 6494942) and Riou et al. (US 4877686), and further in view of Nigam et al. (US 5973025).

**Deardurff et al. discloses:**

As per claim 12: a method of reducing dye migration on a print medium (column 1, lines 49-55) and a printed image having improved permanence comprising: providing a print medium having a coating layer (column 10, line 7, table 1); applying an inkjet ink comprising a boronic acid dye (column 4, lines 3-10) to the print medium.

As per claim 16: the boronic acid dye comprises a boric acid group or boronic acid group (column 4, lines 3-10) and a dye selected from the group consisting of azo, triphenylmethane, anthraquinone, methane, xanthine, oxazine, thiazine, azine, thiazole, quinolinone, aminoketone, nitro, nitroso, phthalocyanine, acridine, indamine, and indophenol (column 2, lines 59-64).



As per claim 18: a boronic acid dye (column 4, lines 3-10) and a coated print medium (column 10, line 7, table 1).

**Riou et al. discloses:**

As per claim 13: a coating layer on the coated print medium comprising a polyhydroxylated material (column 3, lines 45-53).

As per claim 14: a material comprising a polyhydroxylated compound having at least two hydroxyl groups on one molecule of the polyhydroxylated compound positioned on the same side of the polyhydroxylated compound (column 3, lines 45-53).

As per claim 15: a material wherein the polyhydroxylated compound is selected from the group consisting of polyvinyl alcohol, cellulose, a sugar, and a starch (column 3, lines 50-53)

As per claim 19: the coated print medium comprises a polyhydroxylated material (column 3, lines 45-53)

As per claim 20: the polyhydroxylated material comprises at least two hydroxylated compounds each hydroxylated compound having at least two hydroxyl groups (column 3, lines 62-66).

**Deardurff et al. and Riou et al. do not disclose:**

As per claim 12: forming a covalent bond between the boronic acid dye and the coating layer.

As per claim 18: boronic acid dye covalently bonded.

**Nigam et al. discloses:**



As per claim 12: forming a covalent bond between the boronic acid dye and the coating layer (column 9, lines 43-55).

As per claim 18: boronic acid dye covalently bonded (column 9, lines 43-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the a method of reducing dye migration on a print medium and a printed image having improved permanence taught by Deardurff et al. as modified with the covalent bond of Nigam et al. in order to provide a stronger printed image.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deardurff et al. (US 6494942), Riou et al. (US 4877686), and Nigam et al. (US 5973025) in further view of Kojima et al. (US 5380612).

Deardurff et al. teaches a boronic acid dye and a coating layer comprising, and Nigam et al. teaches forming a covalent bond between boric acid and a coating layer; however, Deardurff et al. as modified does not teach at least two hydroxyl groups in the polyhydroxylated compound or hydroxyl group in the at least two hydroxylated compounds.

Kojima et al. teaches at least two hydroxyl groups in the polyhydroxylated compound or hydroxyl group in the at least two hydroxylated compounds (column 8, lines 43-66)



It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Deardurff et al. as modified in order to better disperse the coating solution.

### ***Response to Arguments***

Applicant's arguments to claims 2-5, 8, 9, 12-16, and 18-20, filed on 6/5/06, have been fully considered but they are not persuasive.

Applicant argues that the obviousness rejections for claims 2-5, 8, and 9 are improper because Deardurff et al. is drawn to an aqueous ink jet ink that includes an azomethine dye having a water solublizing functional group; however, Dearduff et al. does not disclose a coated print medium comprising a polyhydroxylated material in the coating layer. Applicant argues that Riou et al. does not overcome this deficiency; however, examiner would like to point out in the abstract that Riou et al. discloses "the recording sheet for ink-jet printing according to the invention includes, in its coating, a polyhydroxylic polymeric binder with the hydroxyl groups in the cis position". Deardurff et al. and Riou disclose the claim limitations as presented. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink and coated print medium of Deardurff et al. with the disclosure of Riou et al. in order to improve the print quality by reducing the hair cracks. The recording medium of Riou et al., as noted by the applicant, is compatible with any type of ink, thus, it would have been obvious to



one of ordinary skill in the art at the time of the invention that the ink taught in Deardurff et al. could be used on the medium taught by Riou et al.

Applicant argues that Nigam et al. does not teach a coated print medium comprising a polyhydroxylated print material; however, this is taught by Deardurff et al. and Riou et al. It would have been obvious to one having ordinary skill in the art to covalently bond an ink containing boric acid and a polyhydroxylated material as these bonds are more difficult to break.

In regards to Applicant's arguments to claims 6, 7, 10, 11, and 17, with respect to Nakagawa et al, Examiner has noted that the reference does teach a film covering a print head rather than a coating film for a print medium. The Nakagawa reference has been replaced with Kojima et al. (US 5380612) and therefore, arguments to claims 6, 7, 10, 11, and 17 are considered moot.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura E. Martin



**STEPHEN MEIER**  
**SUPERVISORY PATENT EXAMINER**